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ABSTRACT

The Industrial Arts Career Exploration (IACE) Program in Utah was evaluated for the year 1978-79 in order to describe the status of the programs, numbers, organizational patterns, and participants. This information was collected by visiting the schools and using an information form; additional evaluation was derived by comparing Career Education Inventory scores of 455 representative junior high school students in the IACE program. Comparisons were made on recognition of IACE occupations and non-IACE occupations; relationship to data/people/things for occupations; and recognition of educational requirements and common tools. Comparison of the data provided information such as the following: (1) students in higher grades scored higher, but not significantly so; (2) seven times as many boys were tested as girls and the boys scored slightly higher than the girls in all categories; (3) the majority of the schools had forty modules in use; (4) the students who used the audio playback unit showed significant differences over non-users in most evaluation categories; (5) students who used the slide/tape program scored higher; and (6) students scored significantly higher on the data/people/things test section. The evaluation concluded that only the orientation slide tape and evaluation devices had identifiable impact upon careers and that the teacher or teachers were the single most significant influence on a successful program. (Evaluation instrument is appended.) (KC)

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INDUSTRIAL ARTS CAREER EXPLORATION

A PROJECT EVALUATION

1978-1979

Submitted by

Industrial and Technical Education Department

Utah State University

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INDUSTRIAL ARTS CAREER EXPLORATION

PROJECT EVALUATION

INTRODUCTION

The purpose of this paper is to report on an evaluation of the Industrial Arts Career Exploration Program in Utah for 1978-9. It is designed to present information on the status of the programs, numbers, organizational patterns and participants in the program. This information was collected by visitation to the schools using an information form.

Additional evaluation is presented by comparing the scores of students in the IACE Program using a Career Education Inventory. Comparisons were made concerning ages, schools, grades, and the organizational patterns identified in the survey above. The instrument was designed to measure students ability to identify occupations included in IACE and some not in IACE. It measured their knowledge of the relationship of occupation in and out of IACE to data, people and things. The test reviewed the educational requirements of ten occupations, technical information on the tools used in the ten occupations in the IACE program and the working environment of ten additional occupations.

Data were collected and analyzed by Neill Slack, Industrial and Technical Education Department, Utah State University and Larry Hughes, graduate student. Visits were made throughout the 1978-9 school year and tests were administered in late April and early May of 1979. Special credit is given to the instructors who gave of their class time for the testing and especially to the programs at Cedar City Junior High, Dixie Junior High and Logan Junior High for their cooperation in administering the instrument in the testing stages.

Information in this report will be of value to other institutions contemplating adopting IACE, to teachers and adminsitrators currently participating in IACE, to teacher education programs, staff of the State Board for Vocational Education, staff of the American Industrial Arts Association and the Career Education Section of the U.S. Office of Education.

BACKGROUND

Career Education has recently emerged as a composite of innovations with the central theme being the development of self in relationship to education and careers. It is a concept which possesses the potential to revitalize the formal educational system and hasten the advance into the 21st century. It is a concept which demands increased experimental learning for children, youth and adults.

The teaching methods or process used to illustrate abstract concepts related to both life goals and subject goals are, in addition to manipulative activities: field trips, interpersonal interaction, multi-media, guest speakers, simulation, and career guidance. The primary focus of the process is the use of "real" experiences to illustrate abstract symbols and concepts related to self, education and careers. (Nervig, 1977)

Career education provides meaning to the subjects currently taught in the schools. Research indicates that students achieve a higher level of academic skill when learning experiences related to things outside the school rather than being confined solely within the four walls of the classroom. The student does not exist solely to attend school, nor should the school attempt to exist separate and apart from the society in which it finds itself.

A Career Development in Industrial Arts (CDIA) project was funded in 1975 to implement the career education concept in industrial arts. This project was directed by Joe O. Luke, State Specialist for Industrial Arts Education, and coordinated by Dr. Neill Slack, Industrial and Technical Education Department, Utah State University. Under their direction an Industrial Arts Career Exploration (IACE) program was initiated to provide career exploration learning experiences for junior high school students. A design team of industrial arts teachers utilizing the basic concepts and research design of previous studies in Utah, developed and tested at the prototype level a series of self-instructional modules. These modules were student-centered, occupational-related experiences designed to provide the first level of instruction for an industrial arts career exploration program.

Eight schools in the state pilot tested the modules during the spring of 1976. The program has grown to encompass 41 schools. In that period of time, four studies have been conducted relating to the organization,

effectiveness and acceptance of the work in the schools. Loveless conducted a survey on the reaction of parents, administrators and students to the IACE program in the spring of 1976 with the eight programs. The report has a favorable reaction from each of the three groups.

Moeller conducted a study to ascertain the effects of the Career Development in Industrial Arts on student occupational interests and cognitive achievements. Two tests were administered; the Ohio Vocational Interest Survey and the General Industrial Arts-Cooperative Industrial Arts Test. Seventh grade students completing 14-26 modules had a significantly higher relationship between their occupational plans and their measured vocational interests. A lower relationship was measured for students who had completed only 0-13 modules or those with more in the 27 to 40 range. Moeller also found that IACE students scored no better or no worse on the Cooperative Industrial Arts Test than did those students in matched traditional industrial arts programs.

Nervig gathered data on the installation phase of IACE to identify the management, operational and facility contingencies which were critical to the operation of the instructional program in the school environment. He reported that a single teacher was able to efficiently manage or teach the program and positive student participation was maintained during the field test. The program could be implemented in existing facilities with minimal modification and expense. Precautions needed to be taken to provide security for the module hardware when not in use.

In March 1978, Hanisch, Hughes and White visited sites in Utah to evaluate the IACE program in view of its feasibility of serving a career exploration purpose. The final report was prepared as part of the contract agreement of the U.S. Office of Education, Office of Career Education and the American Industrial Arts Association (AIAA). The report describes the program in sufficient depth so that other middle schools or junior high schools could replicate it. Strengths of the program were listed as the utilization of a variety of projects or activities, occupational information presented related to the activity, and open entry-open exit kinds of programming.

One of the AIAA reviewers main criticisms was that it explored occupations that were narrowly limited to the blue-collar, trade and industry

type of jobs. Concern was also expressed on the lack of developing in the student a broad understanding of the industrial society or his/her role as a consumer or decision-maker in that society. The report ended with a recommendation that research efforts be undertaken to determine what cognitive, psychomotor and affective learning has occurred as a result of participation in the program.

EVALUATION

Evaluation consists of gathering of data so that it can be interpreted and eventually utilized. This presentation of data is divided into two sections so that it may be more readily put into a perspective and used. The first section is a tabulation of the status of the IACE project at the end of the 1978-9 school year. The second section presents the data gathered from comparisons of the scores made by students in IACE when they were administered a Career Awareness Instrument.

Status

Programs were present in 41 middleschools and junior high schools with an additional three program variations. The School for the Deaf, the Skill Center and the Ogden School District had the program and were using it for their own use and interpretation. Four of the programs were in middleschools, 33 were in junior high schools and four were in junior/senior high combinations.

Of the 41 schools, eight had used the program for three years or more, 15 had begun operation in the 1976-7 school year and 14 had the program only in 1977-8. The remaining four started in 1978-9 and were not entirely organized or operational.

Approximately 6000 students were enrolled in IACE programs during the two semesters of the 1978-9 school year. There were 2993 enrolled during the spring semester based on the average number reported in the survey. Eight percent were in the sixth grade, the majority, or 75 percent, were in the seventh grade and 18.5 percent were in the eighth grade.

The average number of modules being used in the programs was 37.1 ranging from a low of 29 to a high of 48. The average number of weeks that they were used during the spring semester was 13.76, ranging from nine weeks to 18 weeks. The most common length of time used was either nine weeks or 18 weeks.

The average number of modules completed by students was 19.25 with a range of five to 37.

Facility arrangements varied a great deal as schools attempted to adapt to this new approach. In 64 percent of the programs the modules

were located in separate rooms or laboratories. Eighteen percent were in mixed situations with some modules in the regular industrial arts laboratory and the remainder in separate rooms. Eighteen percent of the programs had integrated their modules completely in the regular industrial arts laboratory.

Seventeen percent of the programs had a 50-50 ratio of girls and boys. Fifty-seven percent had some girls ranging in a minimal enrollment of five to 12 percent. Twenty-five percent had no girls enrolled.

Among other organizational factors which were significant can be included a 60 percent utilization of play back units. The slide/tape orientation was reported used in 74 percent of the cases. Career profile sheets were used in 92.5 percent of the cases. The safety test developed for the program was administered in 60 percent of the schools and the module evaluation forms were used by 59 percent of the teachers.

A final element of the status was the utilization of student assistants in 79 percent of the schools. Twelve and one-half percent used these assistants to grade, 18 percent had them assist with instruction on the modules, and 59 percent of the teachers had students issue supplies.

This data may be more succinctly presented in the following summary.

Status Summary for IACE 1978-79:

Number of Programs. 41

Number of Junior High Schools 33

Number of Middle Schools. 4

Number of combined Junior/Senior High Schools . 4

Special Programs. 3

Number enrolled Spring Semester 1978-79 . . .2993

- Percent of girls enrolled 15
- Percent in 6th grade. 8
- Percent in 7th grade. 73.5
- Percent in 8th grade. 18.5

Average number of modules in use per program.37.1

Average number of modules completed 19.25

Average number of weeks used in a semester. 13.76

--more--

Status Summary for IACE 1978-79, continued

Type of facility:
- Separate laboratory. 64%
- Mixed (50% separate, 50% integrated. 18%
- Completely integrated. 18%

Utilization of play-back units 60%

Programs using Career Profile Sheets 92.5%

Percentage using student assistants. 79%
Total percentage using student assistants. . . 79%
- Students used for grading. 12.5%
- Students used for issuing supplies 59.5%
- Students used for instruction. . . 28.0%

Programs using slide/tape orientation. 74%

Programs using Safety Test 64%

Programs using Module Evaluation Sheets. . . . 59%

Programs using other evaluation efforts. . . . 53%

Career Awareness Evaluation

The second portion of the evaluation was a comparison of the scores of a representative sample of students in IACE on an instrument designed to identify elements of career awareness. The scores of the students were compared on the basis of sex, grade level, age, and the number of years the program had been active. A series of other management or organizational factors were also used to make comparisons. These were: use of the guide prepared for the program, use of the slide/tape orientation materials, use of the play-back (audio) units, integration of the modules into the regular program, and use of student assistants among some of the management commitments.

A review of the career awareness inventories that were available revealed that none were applicable. An instrument was then developed which dealt with the specific occupations in IACE. Twenty pages of questions with liberal use of pictorial illustrations were prepared (Appendix A). The instrument was tested in three junior high schools in Logan, Cedar City and St. George, with a total of 42 students. Modifications were made in relation to length of the instrument, working, points of misunderstanding and any lack of clarity in directions. Sections

of the instrument were organized around the following items: a) occupational identification; b) relationship of occupations to data/people/things; c) educational requirements; d) hand tools related to IACE occupations; e) environment; and d) status/prestige. The latter section did not produce usable data or comparisons.

Twenty-six of the forty-eight occupations in IACE were included one or more times in the five sections of the instrument. These were divided into the four clusters as follows: five from transportation, six from communications, nine from manufacturing and six from construction.

The instrument was administered in 18 schools to 455 students during the months of April and May. The answer sheets were hand scored and the data were tabulated for submission and analysis to the Utah State University Computer Center. The data were analyzed for comparison in the following three categories:

1. Comparison of the student's knowledge of career awareness by exhibiting recognition of occupations and their relationship to data/people/things.
2. Comparison of the ability of students to relate occupations to common tools, work environment and educational requirements.
3. Comparison of the effect of organizational factors for the operation of IACE programs using the mean scores of participating students when grouped according to the various organizational factors.

The mean scores of the 455 students were divided into the five usable categories or sections of the test. Comparisons were made using the T test for correlations or analysis of variance for the differences as the students were grouped. The five sections of the test yielding scores were:

1. Recognition of workers in IACE occupations.
2. Recognition of workers in non-IACE occupations.
3. Relationship of ten occupations to data/people/things.
4. Educational requirements of ten occupations.
5. Common tools used in IACE occupations.

Data Obtained:

First the factors relating to demographic data were identified and compared. These included number of years in use, grade level, and sex. Finally the organizational factors are reported dealing with the use of slide/tape orientation, use of playback (audio) units, integration into regular programs, number of weeks used, number of modules in use,

number of modules required, number of modules completed, and use of career or IACE evaluation instruments.

Demographic Data: Data were secured from 68 students in programs which were one year old, from 160 students in two-year-old programs; and 227 in programs operating for three years (Table 1).

Table 1. Mean scores of students who were in programs which had been in operation for periods of one, two, or three years

Test Section	Mean Scores by Length of Program			F Probability*
	One-Year	Two-Year	Three-Year	
Recognition of Occupations	32.50	30.33	31.59	0.0764
Recognition of Occupations Not in IACE	17.54	16.69	17.35	0.1922
Relation of Occupations to Data/People/Things	10.67	10.62	11.27	0.1672
Educational Requirements of Occupations	5.36	9.99	5.45	0.1501
Common Tools Used in IACE Occupations	5.45	5.26	5.69	0.1159

* F probability should reach 0.05 for significance.

The significance of the differences between the means does not reach the 0.05 level with any of the three groups when comparing the length of time in use in the schools. It can be noted that the most significant difference is 0.07 in the category dealing with recognition of occupations. The group of students identified with one-year programs scored highest and two-year programs were the lowest.

Twenty-two students were tested in grade 6, 380 in grade 7 and 53 in grade 8. Of these, 57 were girls and 397 were boys. Table 2 shows comparison of mean scores by grade level. None of the factors reached the .05 level of confidence. It should be noted that all the scores relating Data/People/Things relationship increased with the higher grade level. Partial data on the section relating to prestige of occupations were significant by grade level with an F Probability of 0.0325. Grade 6 had a mean score of 7.18, Grade 7 was 6.04 and Grade 8 was 6.85 Students at higher grade levels in IACE had a better perception of prestige of occupations.

Table 2. Comparison of mean scores by Test Section of students grouped by grade level.

Test Section	Mean Scores			F Probability*
	Grade 6	Grade 7	Grade 8	
Recognition of Occupations	29.82	31.15	32.87	0.165
Recognition of Occupations not in IACE	16.22	17.06	18.11	0.104
Relationship of Occupations to Data/People/Things	9.59	11.05	10.88	0.164
Educational Requirements of Occupations	4.68	5.24	5.79	0.133
Common Tools Used in IACE Occupations	4.63	5.54	5.64	0.090

*F Probability should reach 0.05 for significance.

As part of the test comparing the students by sex (57 girls and 397 boys) revealed any significant differences in mean scores. Table 3 shows the boys scored slightly higher in all test section categories.

Table 3. Comparison of mean scores of students when grouped by sex.

Test Section	Mean Scores		F Probability*
	Boys	Girls	
Recognition of Occupations	31.30	31.28	0.9812
Recognition of Occupations not in IACE	17.16	17.07	0.8604
Relationship of Occupations to Data/People/Things	11.03	10.52	0.3032
Educational Requirements of Occupations	5.30	5.11	0.5546
Common Tools Used in IACE Occupations	5.53	5.30	0.4346

*F Probability should reach 0.05 for significance.

Organizational Factors: Questions had long been raised concerning many of the administrative aspects relating to the success of the IACE programs. Specifically, the value of using the audio playback units, the degree to which the units were integrated into the laboratories, the use of

student assistants, Level I Guide, Safety Test, Orientation Slide/Tape, module evaluation forms and profile sheets were posed as areas of evaluation. The following data are reported to bear upon the evaluation of these organizational factors.

In every case, the student mean scores were higher in the group when the slide/tape orientation was used (Table 4). Recognition of occupations and relationship to data/people/things were significant as shown by the underlined F Probability figures in Table 4 below. The mean score for educational requirements has an F probability low enough to bear mentioning.

Table 4. Mean scores of students grouped as Users or Non-Users of the Slide/Tape Orientation

Test Section	Mean Scores		F Probability*
	Slide/Tape	No Slide/Tape	
Recognition of Occupations	31.56	30.9	<u>0.09</u>
Recognition of Non-IACE Occupations	17.26	16.78	0.325
Relationship to Data/People/ Things	11.22	9.96	<u>0.002</u>
Educational Requirements of Occupations	5.37	4.92	0.07
Common Tools Used in IACE Occupation	5.54	5.36	0.43

* F Probability underlined if it reaches the 0.05 level of confidence.

The mean scores of students who had taken the IACE Safety Test were significantly different from those who did not take the test in the Educational Requirements categories. The groups were quite evenly divided with 281 taking the test and 172 not taking the test. Those not taking the test had a mean score of 5.09 compared to 5.59 for those who took the test. This was significant with an F probability of .025.

Non-integrated program students scored slightly higher in three of the five categories (Table 5). The closeness of the scores indicates little or no difference in this organizational pattern.

The group using the modules for the longest period of time (18 weeks) was the largest with 209 students tested. The shortest period had the least students and the average number (95) reported a nine-week utilization. Even though none of the mean scores of any of the groups was significant, the 25 students using a 13-week period scored higher

in every category (Table 6). The five-week period scored lowest in three of the five categories.

Table 5. Comparison of mean scores of non-integrated program students versus IACE-integrated program student scores

Test Section	Mean Scores		F Probablity*
	Integrated	Non-Integrated	
Recognition of Occupations	31.16	31.34	1.10
Recognition of Non-IACE Occupations	17.23	7.10	1.09
Relationship to Data/People/ Things	10.93	10.97	1.12
Educational Requirements of Occupations	5.21	5.32	1.03
Common Tools Used in IACE Occupation	5.51	5.50	1.10

*F Probability should reach 0.05 for significance.

Table 6. Comparison of mean scores of students by groups based on the number of weeks used

Test Section	Weeks Used						
	5	8	9	10	12	13	18
Recognition of Occupations	(30.95)	32.54	30.25	31.09	32.38	34.92	31.03
Recognition of Non-IACE Occupations	(16.70)	17.62	16.73	16.93	17.74	18.52	17.08
Relationship to Data/ People/Things	11.72	11.27	10.84	(10.44)	11.50	11.08	10.90
Educational Requirements of Occupations	3.55	3.76	3.31	(3.18)	3.48	3.56	3.43
Common Tools Used in IACE Occupation	(5.20)	6.00	5.25	4.76	5.74	6.40	5.13

When students were grouped according to the number of modules in use, the largest number of students were in the group using 39 to 40 modules. A significant difference was observed in the identification of common tools with the greater number of modules available, or 39 to 40. Even though none of the other categories was significant, the mean scores were highest in the 44 to 48 grouping and this variation was in the non-IACE category (Table 7).

It is important to note that 35% of the students tested were using playback audio units for 90% of the time. Only 17% were using them less than one-half of the time. The use of playback units created a significant difference between the groups in all test sections except Data/People/Things (Table 8).

When students were grouped by percentage of time, two groups always scored best; the group at 80% and the group at 30%.

Table 8. Mean scores of students grouped by percentage of time using Playback Units

Test Section	Mean Scores						Probability*
	90%	80%	70%	50%	30%	10%	
Recognition of Occupations	30.42	33.49	29.55	30.75	34.41	31.52	0.0018
Recognition of Non-IACE Occupations	16.64	17.98	16.26	17.37	18.26	17.65	0.0374
Relationship to Data/People/Things	10.92	11.76	10.82	10.10	11.75	10.59	0.13
Educational Requirements of Occupations	5.11	5.48	4.77	5.14	6.36	5.34	0.0235
Common Tools Used in IACE Occupation	4.95	6.22	5.52	4.55	6.22	4.95	0.00

*F Probability is underlined if it reaches the 0.05 level of confidence

Mean scores of students required to take a certain number of modules were significantly different in all but the Common Tool section of the test (Table 9). In all sections except Data/People/Things, the group requiring 0 to 4 modules scored the lowest. When the number of modules required was above 10 and at the 20-required level, the students scored significantly higher in all sections except on Common Tools.

The number of modules completed by each student tested was not obtained but the average number completed was reported by each instructor. Two categories were significant in this grouping. The Relationship to Data/People/Things category was significantly different with the mean score of the group completing the fewest modules being much higher than that of the groups completing more than 10. Scoring on common tool recognition was

highest for groups completing 16-17 and lowest for the group completing the greatest number (Table 10).

Table 10. Mean scores of students grouped by average number of modules completed

Test Section	Mean Scores (grouped by average number completed modules) 6	8-10	12-14	16-17	20-21	26-28	F Probability*
Recognition of Occupations	33.62	31.40	(30.04)	31.01	32.85	30.88	0.20
Recognition of Non-IACE Occupations	17.87	17.14	(16.13)	17.16	18.05	16.91	0.14
Relationship to Data/People/Things	12.75	11.03	10.25	11.81	11.18	(10.57)	0.0436
Educational Requirements of Occupations	6.31	5.27	5.21	5.53	5.38	(5.12)	0.442
Common Tools Used in IACE Occupation	5.33	4.77	4.87	6.20	5.52	(5.89)	0.000

*F Probability underlined if it reaches the 0.05 level of confidence.

The use of module evaluation forms showed a significant difference in the Data/People/Things category in favor of their use. Most other categories favored lack of use of this evaluation but not significantly so (Table 11).

Table 11. Mean Scores of students grouped by use or non-use of Module Evaluation

Test Section	Mean Scores Module Evaluation Used	Module Evaluation Not Used	F Probability*
Recognition of Occupations	31.13	31.60	0.50
Recognition of Non-IACE Occupations	17.04	17.36	0.42
Relationship to Data/People/Things	11.22	10.37	0.014
Educational Requirements of Occupations	5.24	5.37	0.57
Common Tools Used in IACE Occupation	5.53	5.41	0.51

*F Probability underlined if it reaches the 0.05 level of confidence.

No comparison could be made on the use of the IACE Profile Sheet since all students tested were reported as using this form. When this form was used as the basis for grading students the use was significant. Teachers reported 346 students involved had the sheets used for grading and 109 not used for grading. The mean score of those not using the sheet for grading was significantly higher than those who used it in the test categories dealing with occupational recognition.

The use of Profile Sheets for records had a total of 426 compared to a group of 26 not having had this recording approach. The mean scores of the largest group using the sheet for recording was higher in every category of the test except on Data/People/Things. They were significantly higher when recognizing common tools with an F probability of 0.04.

Use of other evaluations was significant beyond the .05 level in two categories; recognition of occupations in IACE and recognition of non-IACE occupations (Table 12). When students were exposed to programs using additional evaluation forms above and beyond what was furnished through IACE, they scored higher in every category except knowledge of common tools.

Table 12. Mean scores of students comparing groups using other means of career evaluation than those provided by IACE

Test Section	Mean Scores of Groups Using		F
	Other Evaluation	No Evaluation	Probability*
Recognition of Occupations	<u>31.81</u>	31.26	<u>0.027</u>
Recognition of Non-IACE Occupations	<u>17.42</u>	17.15	<u>0.012</u>
Relationship to Data/ People/Things	<u>11.02</u>	11.05	0.303
Educational Requirements of Occupations	5.39	<u>5.44</u>	<u>0.064</u>
Common Tools used in IACE Occupation	5.51	<u>5.67</u>	0.545

*F Probability underlined if it reaches the 0.05 level of confidence.

SUMMARY

The IACE evaluation was administered to 455 students in 18 middle schools and junior high schools in April and May 1979. The evaluation was divided into sections so that comparisons could be made on recognition of IACE occupations and non-IACE occupations. Relationship to data/people/things for occupations was tested as were educational requirements and common tools.

The mean scores of students for each of these test sections were compared in groups by sex, years of IACE operation, and grade level. Additional groups were compared using such organizational factors as number of modules utilized, number completed, and number required. Usage of IACE materials was also compared by grouping those students in programs using audio playback units, evaluation materials and safety tests.

Comparison of data provides the following information:

Students compared between 6th, 7th and 8th grades scored higher in the evaluation instrument with each grade level, but not significantly so.

The number of years the program had been in operation showed no pattern of difference except in recognition of occupations. This favored the new, or one-year-old programs but it did not reach the 0.05 level of significance.

Seven times as many boys were tested as girls. The boys scored slightly higher than the girls in all of the test categories.

The majority of the schools had 40 modules in use. The number of modules in use showed no significant differences except in knowledge of common tools. This favored the larger number of modules in the amount of 39 to 48.

The grouping of students who used the audio playback unit versus non-usage showed significant differences in most evaluation categories. Scores were higher in all cases when the units were used 30% of the time or more.

When the slide/tape orientation program was used the students' mean scores were always higher. In the recognition of occupations and their relationship to data/people/things, the difference was significant.

Integration or separated IACE operation showed higher scores for separate organizational patterns but no differences were significant.

Use of safety test, increase from 9- to 18-week program, number of modules (25-44) in use, and profile sheets showed no significant differences in student performance.

When the instructor required from 10 to 20 module completions, the

students scored significantly higher in all sections of the test except on common tools.

Recognition of common tools was significantly higher for students who had completed 16 or 17 modules. Tools were identified less when they had completed 20 to 28 modules.

When IACE evaluation devices were employed, students scored significantly higher on the Data/People/Things test section. When other career evaluation methods were used by nearly one-half of the students, their mean scores were higher in every category except common tools.

In conclusion, only the orientation slide tape and evaluation devices had the greatest identifiable impact upon careers in this evaluation. Overall achievement was probably greatest when the programs were the best organized and using the materials and forms developed for the program. This would indicate that the teacher or teachers were the most single significant influence on a successful program.

BIBLIOGRAPHY

Loveless, Austin G., Student, Parent, and Administrative Reaction to CDIA. Unpublished report, Industrial and Technical Education Department, Utah State University, Logan, Utah. June 1976.

Moeler, Leland L., A Comparative Study in Career Development in Two Contrasting Industrial Arts Programs Using Simulated Modules as the Variable. Unpublished Doctoral Dissertation, Utah State University, Logan, Utah. 1976.

Mervig, Nordale N., An Evaluation of the Installation Phase of Mediated Career Learning Experiences for the Junior High School. Unpublished Doctoral Dissertation, Utah State University, Logan, Utah. 1977.

Rathbun, Donald L., Project Director, The Feasibility of the Utah Model for Industrial Arts for Serving a Career Exploration Purpose in Middle and Junior High Schools. Final Report Contract No. P.00770621, American Industrial Arts Association, 1201 Sixteenth St. N.W., Washington, D.C. June 1978.

APPENDIX A

SECTION A					SECTION B					SECTION C					SECTION E				
	1	2	3	4		1	2	3	4		1	2	3	4		1	2	3	4
1	1	2	3	4	23	1	2	3	4	45	1	2	3		67	1	2	3		75	1	2	3	4	96	1	2	3	4
2	1	2	3	4	24	1	2	3	4	46	1	2	3		68	1	2	3		76	1	2	3	4	97	1	2	3	4
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5	1	2	3	4	27	1	2	3	4	49	1	2	3		71	1	2	3		79	1	2	3	4	100	1	2	3	4
6	1	2	3	4	28	1	2	3	4	50	1	2	3		72	1	2	3		80	1	2	3	4	101	1	2	3	4
7	1	2	3	4	29	1	2	3	4	51	1	2	3		73	1	2	3		81	1	2	3	4	102	1	2	3	4
8	1	2	3	4	30	1	2	3	4	52	1	2	3		74					82	1	2	3	4	103	1	2	3	4
9	1	2	3	4	31	1	2	3	4	53	1	2	3							83	1	2	3	4	104	1	2	3	4
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11	1	2	3	4	33	1	2	3	4	55	1	2	3							85					106				
12	1	2	3	4	34	1	2	3	4	56	1	2	3																
13	1	2	3	4	35	1	2	3	4	57	1	2	3																
14	1	2	3	4	36	1	2	3	4	58	1	2	3																
15	1	2	3	4	37	1	2	3	4	59	1	2	3																
16	1	2	3	4	38	1	2	3	4	60	1	2	3																
17	1	2	3	4	39	1	2	3	4	61	1	2	3																
18	1	2	3	4	40	1	2	3	4	62	1	2	3																
19	1	2	3	4	41	1	2	3	4	63	1	2	3																
20	1	2	3	4	42	1	2	3	4	64	1	2	3																
21	1	2	3	4	43	1	2	3	4	65	1	2	3																
22					44					66																			

SECTION D					SECTION F		
	1	2	3	4		1	2
86	1	2	3	4	107	1	2
87	1	2	3	4	108	1	2
88	1	2	3	4	109	1	2
89	1	2	3	4	110	1	2
90	1	2	3	4	111	1	2
91	1	2	3	4	112	1	2
92	1	2	3	4	113	1	2
93	1	2	3	4	114	1	2
94	1	2	3	4	115	1	2
95					116		

NAME _____ BOY _____ GIRL _____

SCHOOL _____ AGE _____ GRADE _____

SCHOOL ADDRESS _____
CITY

APPROXIMATE NUMBER OF EACH MODULES YOU HAVE COMPLETED _____

DO NOT WRITE IN THIS SPACE

UTAH

1/21/81

INDUSTRIAL ARTS CAREER EXPLORATION

EVALUATION

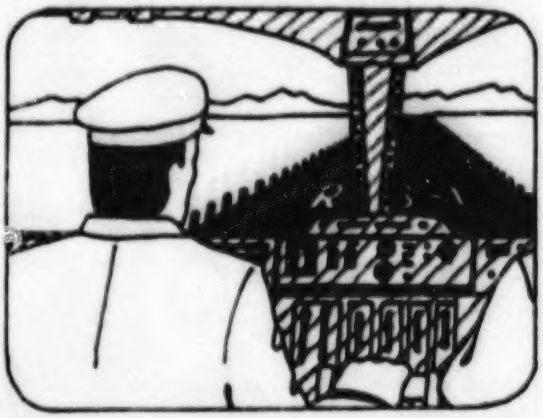
DEVELOPED UNDER THE DIRECTION OF

THE UTAH STATE BOARD FOR VOCATIONAL EDUCATION

250 East 5th South Street, Salt Lake City, Utah 84111

INSTRUCTIONS: You are to go through this section of the booklet to identify the job of the worker in each of the pictures. You will be given five choices to fit with the worker in the picture. When you find the one that best describes the worker, blacken the space on the answer sheet under the number which is the same as your choice, 1, 2, 3, 4, or 5.

1. Which name goes best with the worker?



(1) Cook
(2) Teacher
(3) Baggage Handler
(4) Pilot
(5) Clerk

The best answer is 4. Mark Number 4 on the answer sheet.

Remember the pilot you chose in the picture. Now look at another 5 choices here. Mark the number on your answer sheet for the worker that is most related to the pilots' occupation in the picture.

2. Which worker is most related to the occupation in the picture?

(1) Farmer
(2) Principal
(3) Stewardess
(4) Musician
(5) Secretary

The correct answer is (3) Stewardess. Mark number 3 for question 2 on your answer sheet.

If there are no questions turn to question 3 on the next page and answer number 3 by marking the space on your answer sheet. Go on to each question until you are stopped, or finished at number 44.

Picture 3

3. Which of the following best names the worker in picture 3?

1) Pilot
2) Clerk
3) Baggage Handler
4) Chef
5) Travel Agent

4. Which of the following is most related to occupations shown in picture 3?

1) Chef
2) Stewardess
3) Receptionist
4) Bartender
5) Cashier

Picture 4

5. Which of the following best names the worker in picture 4?

1) Salesman
2) Model
3) Artist
4) Metallurgist
5) Draftsman

6. Which of the following is most related to occupations shown in picture 4?

1) Meteorologist
2) Psychologist
3) Geologist
4) Astronaut
5) Engineer

Picture 5

7. Which of the following best names the worker in picture 5?

1) Salesman
2) Surveyor
3) Engineer
4) Ecologist
5) Economist

8. Which of the following is most related to occupations shown in picture 5?

1) Architect
2) Lawyer
3) Truck Driver
4) Forest Ranger
5) Illustrator

Picture 6

9. Which of the following best names the worker in picture 6?

1) Economist
2) Forest Ranger
3) Farmer
4) Horticulturist
5) Sociologist

10. Which of the following is most related to occupation shown in picture 6?

1) Veterinarian
2) Anthropologist
3) Fisherman
4) Truck Driver
5) Construction Engineer

Picture 7

11. Which of the following best names the worker in picture 7?

1) Sign Painter
2) Screen Printer
3) Photographer
4) Model
5) Drafter

12. Which of the following is most related to occupation shown in picture 7?

1) Model
2) Musician
3) Illustrator
4) Surveyor
5) Glazier

Picture 8

13. Which of the following best names the worker in picture 8?

1) Machinist
2) Artist
3) Conservationist
4) Carpenter
5) Architect

14. Which of the following is most related to occupation shown in picture 8?

1) Architect
2) Fireman
3) Leather Worker
4) Mechanic
5) Psychologist

Picture 9

15. Which of the following best names the worker in picture 9?

1) Guitar Player
2) Bookkeeper
3) Teacher
4) Messenger
5) Appliance Repair Person

16. Which of the following is most related to occupation shown in picture 9?

1) Electrician
2) Researcher
3) Librarian
4) Shipping Clerk
5) Riveter

Picture 10

17. Which of the following best names the worker in picture 10?

1) Meter Reader
2) Stenographer
3) Computer Operator
4) Cashier
5) Scientist

18. Which of the following is most related to occupation shown in picture 10?

1) Electronic Technician
2) Secretary
3) Tool Maker
4) Lineman
5) Mathematician

Picture 11

19. Which of the following best names the worker in picture 11?

1) Pawnbroker
2) Conductor
3) Demonstrator
4) Salesperson
5) Job Analyst

20. Which of the following is most related to occupation shown in picture 11?

1) Travel Agent
2) Sales Representative
3) Clergy Member
4) Auctioneer
5) Caddie

Picture 12

21. Which of the following best names the worker in picture 12?

1) Mail Clerk
2) Engineer
3) Policeman
4) Truck Driver
5) Guide

22. Which of the following is most related to occupation shown in picture 12?

1) Principal
2) Messenger
3) Lawyer
4) Mail Carrier
5) Logger

Picture 13

23. Which of the following best names the worker in picture 13?

1) Computer Operator
2) Salesperson
3) Laboratory Technician
4) File Clerk
5) Textile Worker

24. Which of the following is most related to occupation shown in picture 13?

1) Typesetter
2) Carpet Weaver
3) Mechanic
4) Forrester
5) Butcher

Picture 14

25. Which of the following best names the worker in picture 14?

1) Machinist
2) Welder
3) Greenskeeper
4) Tool Grinder
5) Auto Body Repairer

26. Which of the following is most related to occupation shown in picture 14?

1) Lineman
2) Toolmaker
3) Glazier
4) Roofer
5) Groundskeeper

Picture 15

27. Which of the following best names the worker in picture 15?

1) Model
2) Timekeeper
3) Secretary
4) Ticket Seller
5) Teacher

28. Which of the following is most related to occupation shown in picture 15?

1) Dispatcher
2) Announcer
3) Waitress
4) Receptionist
5) Manicurist

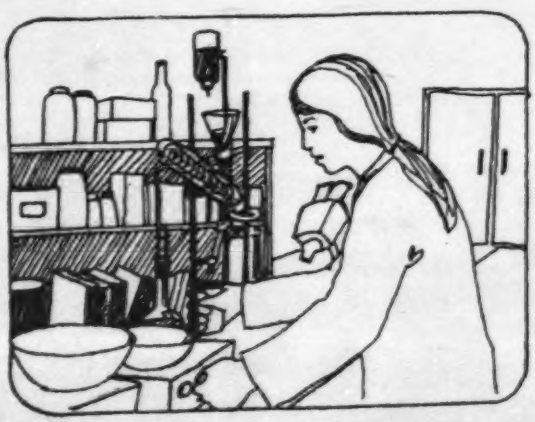
Picture 16

29. Which of the following best names the worker in picture 16?

1) Receiving Checker
2) Glazier
3) Research Assistant
4) Electrician
5) Plumber

30. Which of the following is most related to occupation shown in picture 16?

1) Dry Wall Application
2) Accountant
3) Dentist
4) Foundry Worker
5) Roofer



Picture 17

31. Which of the following best names the worker in picture 17?

1) Weaver
2) Lumber Sorter
3) Drivers License Examiner
4) Clerk
5) Chemist

32. Which of the following is most related to occupation shown in picture 17?

1) Pharmacist
2) Librarian
3) Tile Setter
4) Teacher
5) Order Clerk

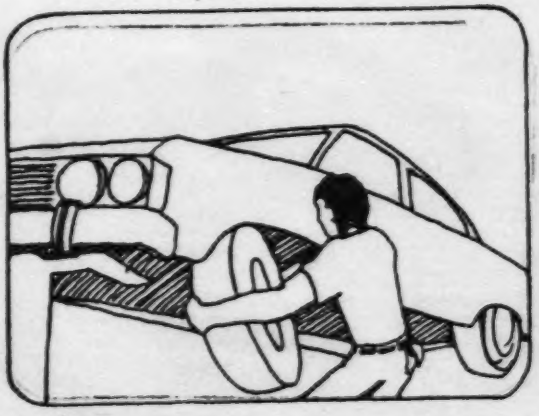
Picture 18

33. Which of the following best names the worker in picture 18?

1) Checker
2) Pharmacy Helper
3) Waitress
4) Doctor
5) Judge

34. Which of the following is most related to occupation shown in picture 18?

1) Coach
2) Physical Therapist
3) Designer
4) Nurse's Aide
5) Pharmacist



Picture 19

35. Which of the following best names the worker in picture 19?

1) Auto Dealer
2) Bicycle Repairer
3) Metallurgist
4) Researcher
5) Mechanic

36. Which of the following is most related to occupation shown in picture 19?

1) Boat Builder
2) Sheet Metal Worker
3) Service Station Attendant
4) Engraver
5) Fireman

Picture 20

37. Which of the following best names the worker in picture 20?

1) Actor
2) Announcer
3) Composer
4) Tape Librarian
5) General Supervisor

38. Which of the following is most related to occupation shown in picture 20?

1) Photographer
2) Compositor
3) Painter
4) Electronic Technician
5) Audio Technician

Picture 21

39. Which of the following best names the worker in picture 21?

1) Cashier
2) Orderly
3) Motel Clerk
4) Auto Service
5) Library Assistant

40. Which of the following is most related to occupation shown in picture 21?

1) Bank Teller
2) Teacher
3) Designer
4) Receptionist
5) Expediter

Picture 22

41. Which of the following best names the worker in picture 22?

1) Brickmason
2) Cable Splicer
3) Electroplater
4) Welder
5) Riveter

42. Which of the following is most related to occupation shown in picture 22?

1) Roofer
2) Machinist
3) Sheet Metal Worker
4) Ornamental Iron Worker
5) Bricklayer

Picture 23

43. Which of the following best names the worker in picture 23?

1) Composition
2) Screen Printer
3) Offset Press Operator
4) Sculptor
5) Drafter

44. Which of the following is most related to occupation shown in picture 23?

1) Painter
2) Architect
3) Mail Carrier
4) Dispatcher
5) Assembler

SECTION B
DATA/PEOPLE/THINGS

Directions: In this section you are to choose the best worker function for each of the jobs listed. All jobs have a relationship to one or more of these functions, DATA, PEOPLE or THINGS. Workers deal with each of these on a high, average or low level. Look at the occupation listed in this example and choose the best relationship of the worker to DATA, PEOPLE or THINGS. Mark a 1 on your answer sheet for High, 2 for Average, and 3 for a low relationship to each function.

	High	Average	Low
45. What is the relationship of a pilot to DATA?	1	2	3
46. What is the relationship of a pilot to PEOPLE?	1	2	3
47. What is the relationship of a pilot to THINGS?	1	2	3

You should have marked number 45, DATA, as 1; number 46, PEOPLE, as number 3; and number 47, THINGS, as 3 for low. If there are no questions, go on to number 48 and mark your answer sheet for the rest of the occupations in this section.

	High	Average	Low
48. What is the relationship of a plastics worker to DATA?	1	2	3
49. What is the relationship of a plastics worker to PEOPLE?	1	2	3
50. What is the relationship of a plastics worker to THINGS?	1	2	3

	High	Average	Low
51. What is the relationship of a compositor to DATA?	1	2	3
52. What is the relationship of a compositor to PEOPLE?	1	2	3
53. What is the relationship of a compositor to THINGS?	1	2	3

	High	Average	Low
54. What is the relationship of a ceramics caster to DATA?	1	2	3
55. What is the relationship of a ceramics caster to PEOPLE?	1	2	3
56. What is the relationship of a ceramics caster to THINGS?	1	2	3

	High	Average	Low
57. What is the relationship of a bookkeeper to DATA?	1	2	3
58. What is the relationship of a bookkeeper to PEOPLE?	1	2	3
59. What is the relationship of a bookkeeper to THINGS?	1	2	3

	High	Average	Low
60. What is the relationship of a chemist to DATA?	1	2	3
61. What is the relationship of a chemist to PEOPLE?	1	2	3
62. What is the relationship of a chemist to THINGS?	1	2	3

	High	Average	Low
63. What is the relationship of a tile setter to DATA?	1	2	3
64. What is the relationship of a tile setter to PEOPLE?	1	2	3
65. What is the relationship of a tile setter to THINGS?	1	2	3

	High	Average	Low
66. What is the relationship of a truck driver to DATA?	1	2	3
67. What is the relationship of a truck driver to PEOPLE?	1	2	3
68. What is the relationship of a truck driver to THINGS?	1	2	3

	High	Average	Low
69. What is the relationship of a gas engine repairer to DATA?	1	2	3
70. What is the relationship of a gas engine repairer to PEOPLE?	1	2	3
71. What is the relationship of a gas engine repairer to THINGS?	1	2	3

	High	Average	Low
72. What is the relationship of an aircraft designer to DATA?	1	2	3
73. What is the relationship of an aircraft designer to PEOPLE	1	2	3
74. What is the relationship of an aircraft designer to THINGS?	1	2	3

S E C T I O N C

Educational Requirements

INSTRUCTIONS: Different occupations require different types of training. Some require only a high school diploma, others technical school, on-the-job training, apprenticeship or college. In the following questions choose the best, but easiest training required for the list of occupations given. As a sample for #75, mark the number for the worker that needs apprenticeship training.

75. Which occupation requires apprenticeship training?

1) Salesperson
2) Draftsman
3) Carpenter
4) Chemist
5) Mail Clerk

If you have chosen 3, Carpenter, that is correct. Go on and mark the questions starting at No. 76 and stop at No. 85.

76. Which of the following occupations requires apprenticeship training?

1) Truck Driver
2) Plumber
3) Cashier
4) Farmer
5) Small Engine Repairer

77. Which of the workers requires attendance at a technical school?

1) Tile Setter
2) Ceramics Caster
3) Metallurgist
4) Motel Clerk
5) Postman

78. Which of the following occupations require a minimum high school completion?

1) Computer Operator
2) Nurse
3) Surveyor
4) Welder, Combination
5) Electronics Technician

79. Which of the following occupations needs completion of college to learn the work?

1) Bank Teller
2) Chef
3) Illustrator
4) Carpenter
5) Architect

80. Which of the following jobs require on-the-job experience, but not college or technical school?

1) Dry Wall Applicator
2) Sales Person
3) Physical Therapist
4) Pharmacist
5) Air Craft Designer

81. Which of the following occupations requires completion of a college degree?

1) Screen Printer
2) Glazier
3) Jeweler
4) Laboratory Technician
5) Aerospace Engineer

82. Which of the following occupations requires only a minimum of high school completion?

1) Economist
2) Surveyor
3) Metallurgist
4) Auto Body Repairer
5) Lawyer

83. Which of the following jobs is most often secured through apprenticeship training?

1) Electroplater
2) Aircraft Designer
3) Sign Painter
4) Receptionist
5) Model

84. Which of the following occupations uses technical school training as a background?

1) Dry Wall Applicator
2) Electric Applicance Repairer
3) Motel Clerk
4) Policeman
5) Brick Layer

85. Which of the following occupations is best learned by on-the-job training?

1) Cement Mason
2) Bookkeeper
3) Artist
4) Computer Operator
5) Announcer

S E C T I O N D

Tools

INSTRUCTIONS: Select the best possible answer for each of the following questions. This section refers to tools used on various jobs. You are to mark the number for the tool most often used by the worker in each question.

86. An electrical appliance repairperson would use which of the following tools to remove insulation from an electrical cord:

    1. slip joint pliers
    2. jack knife
    3. wire strippers
    4. scissors

87. A machinist would remove the rough edges from a part by using a:

    1. hack saw
    2. drill
    3. file
    4. coolant

88. As a plastics worker you would use which of the following tools to drill a hole in plastic?

    1. knife
    2. brace and bit
    3. soldering iron
    4. portable electric drill

89. If you were an architect which of the following tools would you use to help in drawing symbols?

    1. French curve
    2. template
    3. compass
    4. triangle

90. As a bricklayer which of the following tools would you use to apply mortar to brick?

    1. putty knife
    2. trowel
    3. raker
    4. hoe

91. If you were a carpenter which of the following tools would you use to drive nails?

    1. tinners hammer
    2. lead mallet
    3. claw hammer
    4. ball peen hammer

92. As a bicycle repair person you would use the valve tool to remove the:

1. valve stem
2. nail from the tire
3. valve core
4. tire

93. If you were a gas engine repair person which of the following tools would you use to check the air gap on a spark plug?

1. torque wrench
2. screw driver
3. wire gage
4. adjustable end wrench

94. As an illustrator, some of the tools you might use are:

1. hammer, nail
2. pencil, carver, lettering guide
3. screw driver, awl, paper
4. ruler, scriber

95. As a screen printer you would use which of the following to print the design:

1. cloth screen
2. wire screen
3. paper screen
4. metal screen

SECTION E

Environment

DIRECTIONS: Each of the statements below asks a question about a particular occupation. You are to select the answer that best describes what a person in that occupation would most like to do.

96. If you were a glazier you would probably most like to:

1. work with people
2. work indoors
3. work with your hands
4. organize group activities

97. As a electroplater you would probably most like to:

1. work with and help other people
2. give orders
3. work with tools and products
4. work outdoors

98. As a leather worker you probably most like to:

1. develop and analyze new products
2. work to help other people
3. work with tools
4. travel as part of your work

99. If you were an ornamental iron worker you would probably most like to:

1. supervise others
2. be creative and express yourself
3. be promoted rapidly
4. work only during the summer

100. If you were a dry-wall applicator you would probably most like to:

1. work a regular schedule
2. work by yourself
3. work to help other people
4. be creative

101. As a cabinetmaker you would probably most like to:

1. travel as part of your job
2. supervise others
3. work indoors
4. develop new products

102. As a sign painter you would probably most like to:

1. work in an office
2. travel as part of your job
3. be competitive
4. be creative and accurate

103. As an auto body repairer you would probably most like to:

1. be creative
2. work with people
3. travel as part of your work
4. work with tools

104. As a cement mason, you would probably most like to:

1. work with your hands
2. supervise others
3. work to help others
4. be competitive

105. If you were a jeweler, you would probably most like to:

1. be creative and express yourself
2. give orders
3. work outdoors
4. be promoted quickly

106. As an aircraft designer, you would probably most like to:

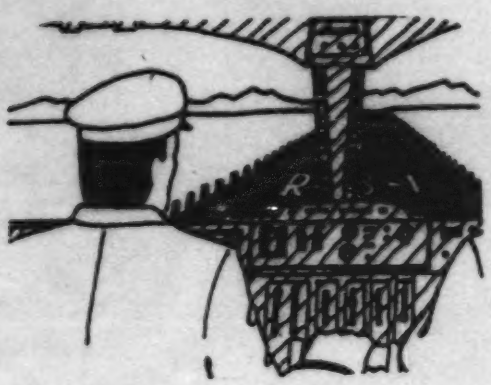
1. work mainly with tools
2. develop new ideas and products
3. work with and help other people
4. give orders

SECTION F

Status/Prestige

INSTRUCTIONS: As we grow up and learn about occupations, some are thought of as being better than others. This may be due to education, salaries, or the type of work one does. A foreman in a factory can be thought of as having more status than the person on the assembly line. In this section you are given pictures of pairs of occupations. You are to mark the number of the worker in each pair that you consider the best.

107.



1. Pilot

1. Auto Service Mechanic

108.

1. Drafter

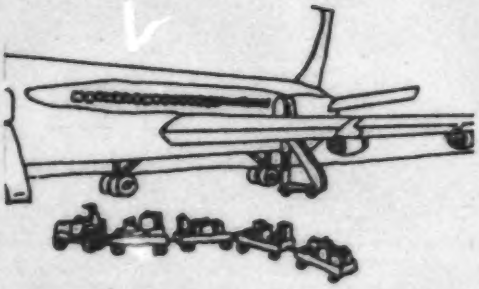
2. Announcer

109.

1. Welder

2. Surveyor

110.

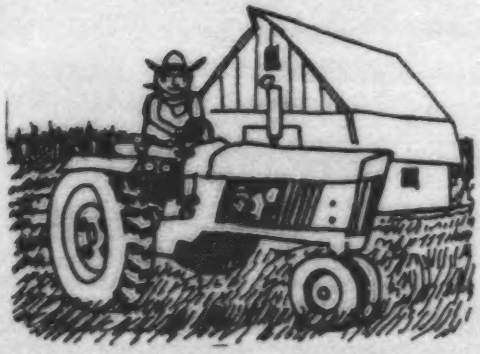


1. Baggage Handler

2. Computer Operator

111.

1. Chemist



2. Farmer

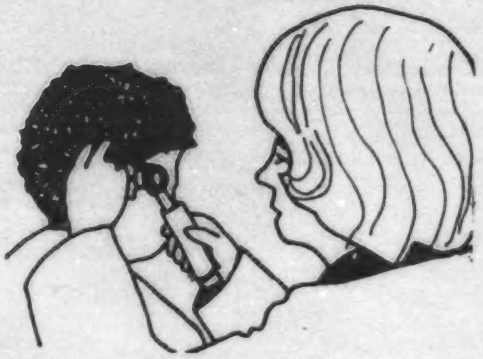
112.

1. Textile Worker

2. Secretary

113.

1. Electrician



2. Doctor

114.

1. Metallurgist

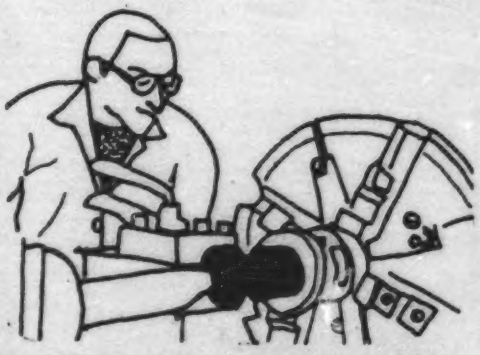
2. Sports Sales Person

115.

1. Carpenter

2. Policeman

116.



1. Machinist

2. Electric Appliance Repair